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# STATION NOTES

## CENTRAL STATES FOREST EXPERIMENT STATION

### COLUMBUS 15, OHIO

No. 44



June 9, 1948

#### PLANTED PINES ON CLAYPAN SOILS OF SOUTHERN ILLINOIS

Shortleaf, loblolly, pitch, and Virginia pine were planted in April, 1940, on an eight-acre area along State Highway 37 two miles north of West Frankfort, Illinois. The planting was made by the Chicago, Wilmington, and Frankfort Coal Co. in cooperation with the Central States Forest Experiment Station. Half the planting stock of each species was 1-0 seedlings and half 1-1 transplants.



Shortleaf pine planted eight years. Virginia pine and pitch pine of same age are at extreme right and left, respectively.

The planting site is a nearly flat area typical of the broad belt of claypan soils which, in southern Illinois, lie chiefly between U. S. Highway 40 and State Highway 13. Similar soils are also present in southwestern Indiana and Northern Missouri. Typical claypan areas have a thin layer of gray or yellowish-gray, strongly leached soil resting on an almost impervious subsoil of light gray clay. Their poor internal drainage causes extreme wetness in the winter and spring, extreme dryness during the summer, and high soil acidity. On the plantation area

the average depth to the claypan is 12 inches and the darker colored topsoil is less than 5 inches deep. Soil acidity was pH 4.0 to 4.5 for the claypan layer and 5.0 for the topsoil.

Eight years after planting, survival is more than 85 percent for all species. Stand heights average approximately 20 feet for loblolly pine, 13 feet for shortleaf pine, 12 feet for pitch pine, and 10 feet for Virginia pine. Heights of trees of a given species are uniform and very little expression of dominance is shown. The 4- by 6-foot spacing and good survival have given a dense stand that will need early thinning to avoid stagnation.

Only pitch pine showed an appreciable difference between trees grown from 1-1 and 1-0 stock. The stand grown from 1-1 stock is now about 14 feet high and has over 90 percent survival. The stand from 1-0 stock is about 11 feet tall and has approximately 70 percent survival.

This coal company, as well as others in the claypan section of southern Illinois, is planting pine for mine props. Some farmers may wish to plant for fence posts, props, or other small timbers. The following preliminary but practical lessons can be learned from this pine planting on the claypan soils of southern Illinois:

1. Virginia and pitch pines will survive and grow, but because of excessive branching and crook have a low value for anything except game and ground cover, and possibly Christmas trees.
2. Loblolly pine survives well and grows the fastest but is subject to bending and breaking by snow and ice. The dead branches tend to persist. It is farther removed from its natural range than shortleaf pine, and consequently its future behavior is less certain.
3. Shortleaf pine is the straightest, prunes the best, and is little subject to snow and ice damage. It survives well but does not grow as fast as loblolly pine. Until more information is available, shortleaf pine should probably be planted for mine props in preference to other pine species.
4. The 4- by 6-foot spacing gave an overly dense stand. Spacing of 6- by 6-, 7- by 7-, or 6- by 8-feet would have been better.

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